



Plasma sources

by  AlmaPlasma

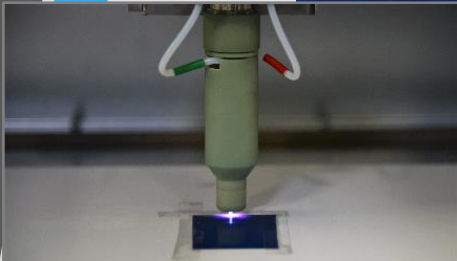
Plasma sources: Corona Jet

Corona Jet is specifically designed for functionalization treatment and deposition of coating. This plasma source has 2 gas inlet lines, one for the primary plasma gas and a second for the introduction of a precursor in the afterglow.

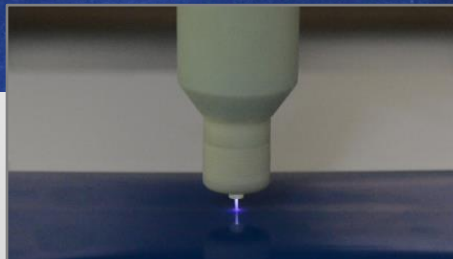
Corona Jet is provided with 2 different nozzle, a standard one and one with reduced diameter (constricted)



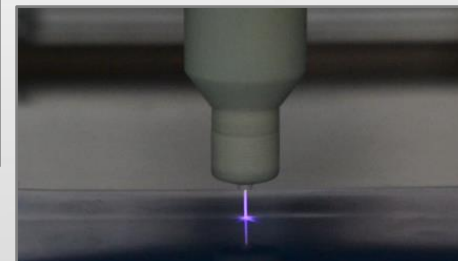
Mounting of the source



Standard treatment with Argon



Constricted nozzle with Argon



Constricted nozzle with Helium



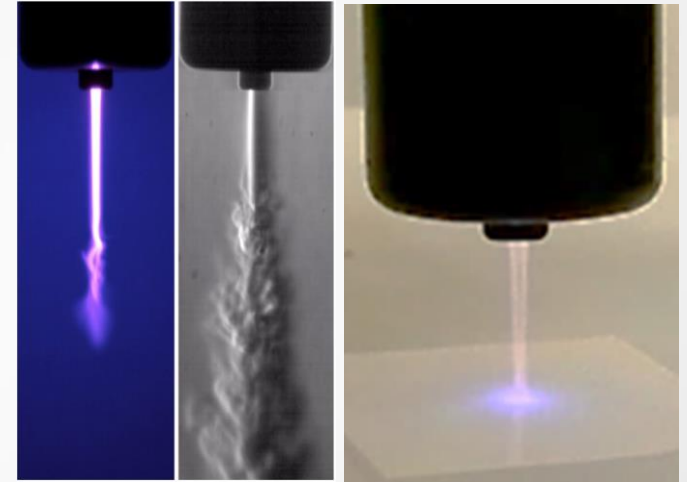
Increase of WCA

Corona Jet: history

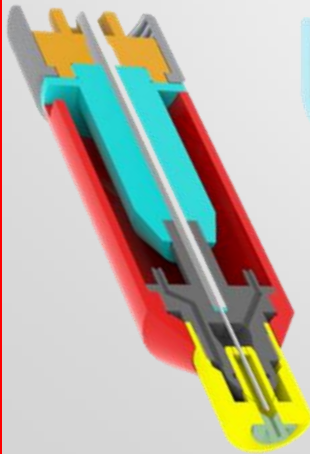
Design, development, prototyping and test of a new CORONA JET plasma source



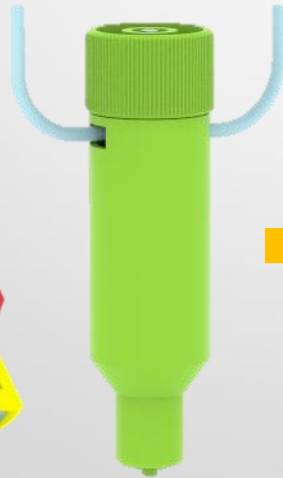
from
UNIBO DUAL GAS
PLASMA JET
to



NEW CORONA JET



Design



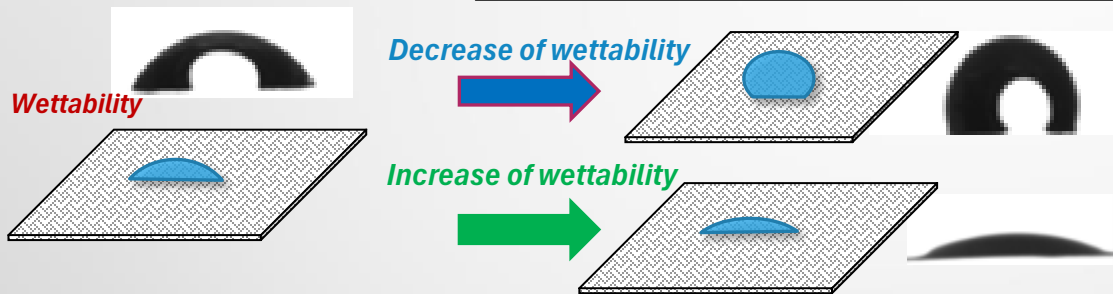
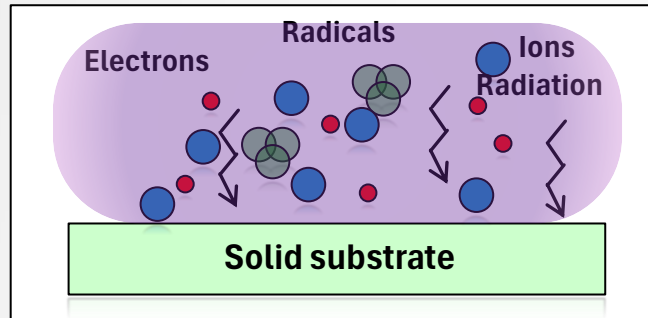
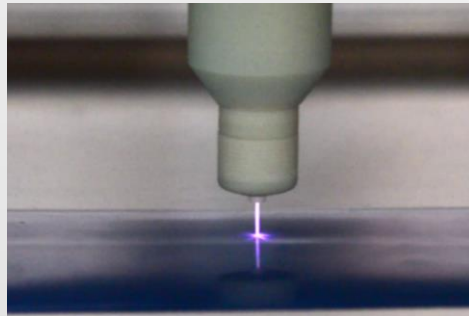
Prototype



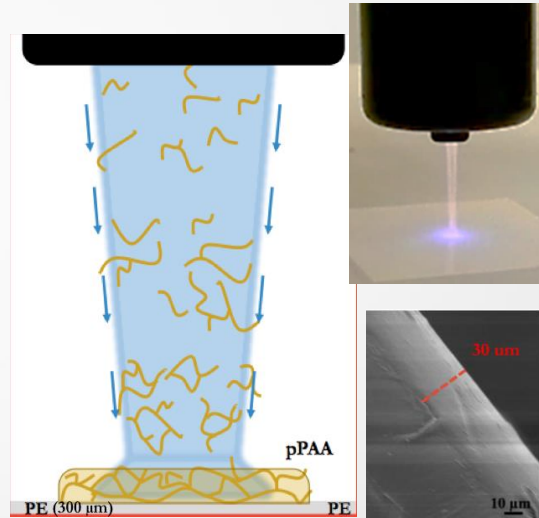
Test

Supported processes: Corona Jet

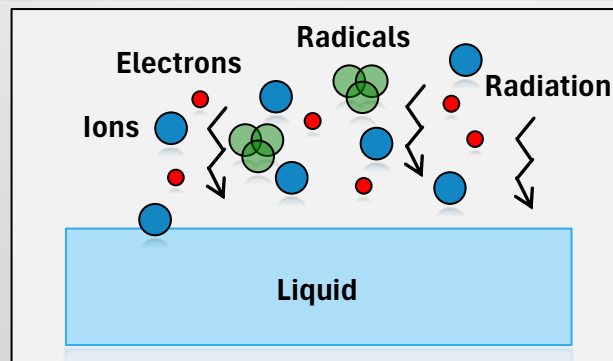
Corona Jet is designed for functionalization, surface activation, thin films deposition and treatment of liquids.



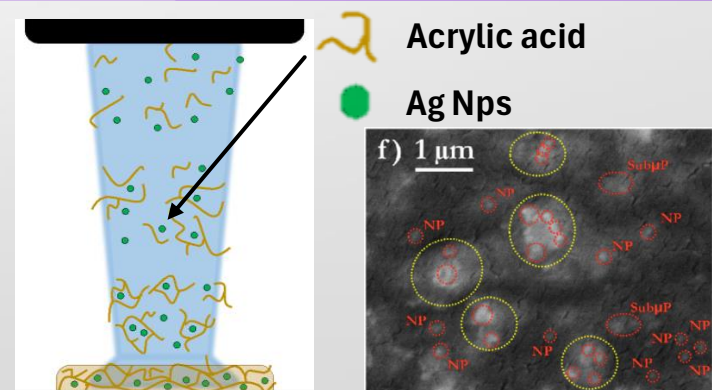
Surface functionalization and activation



Deposition of thin films



Treatment of liquids



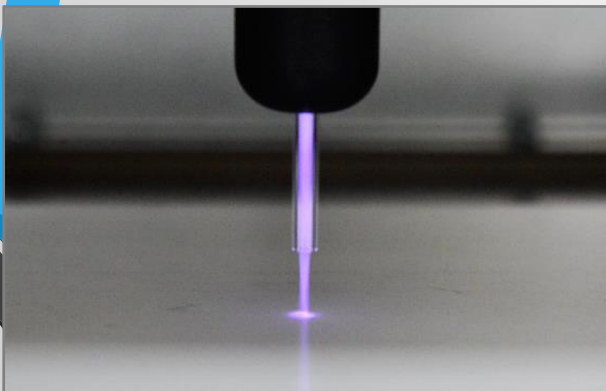
Co-Deposition of nanocomposite coatings

Plasma sources: DBD Jet

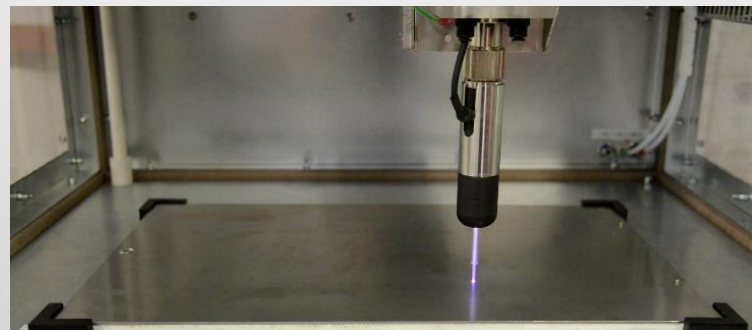
DBD Jet is designed for the treatment of bio-material both in solid and liquid form. Due to its design this plasma source can be operated both on dielectric and metallic surfaces.



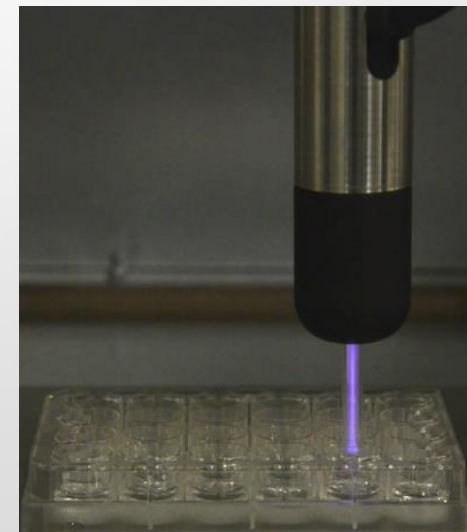
Mounting of the source



Treatment on dielectric surface



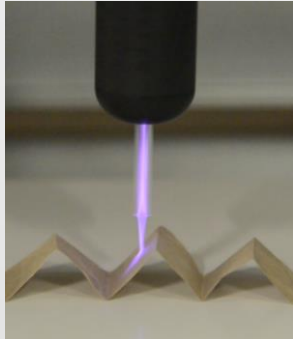
Treatment on metallic surface



Treatment of liquids

Supported processes: DBD-Jet

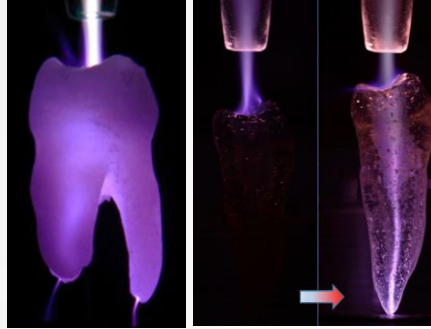
DBD Jet is designed for treatment of surface activation and functionalization, liquids treatment and treatment of biological substrates



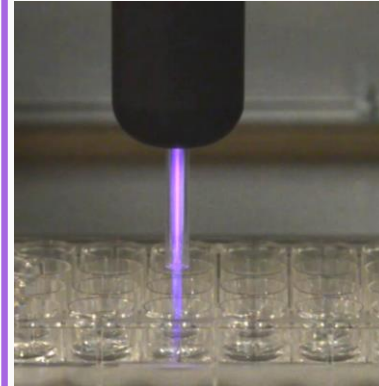
Surface functionalization and activation



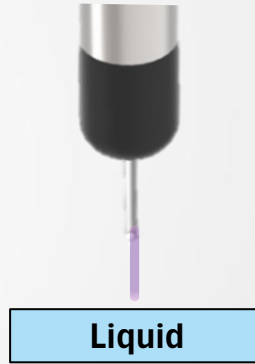
Solid



Treatment of biological substrates



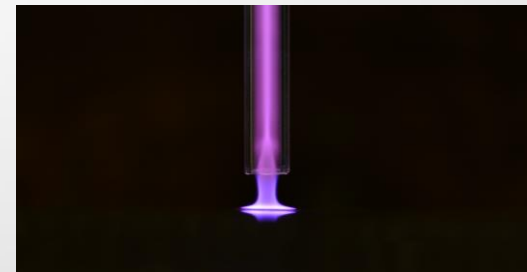
Treatment of liquids



Liquid

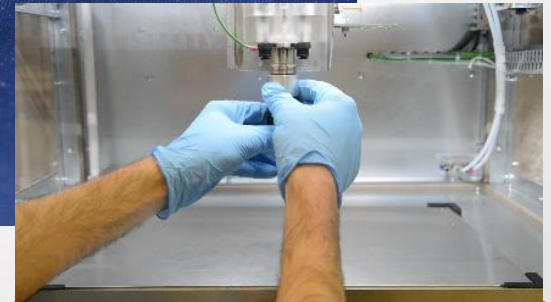
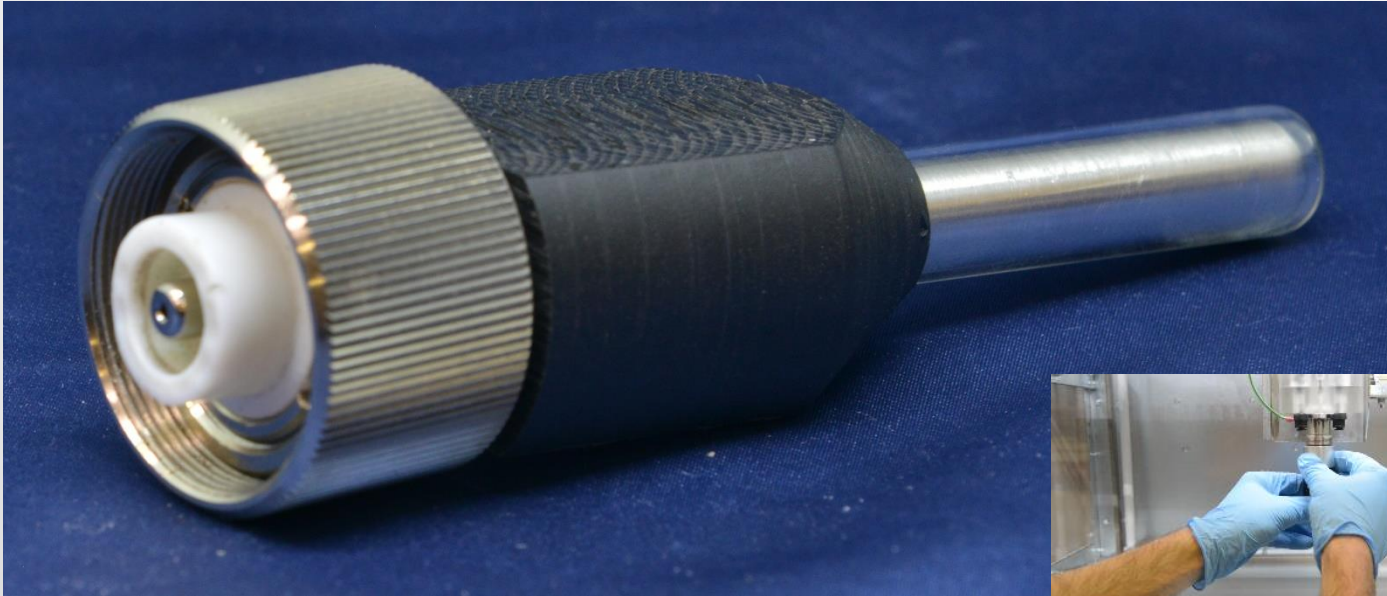


DBD-JET

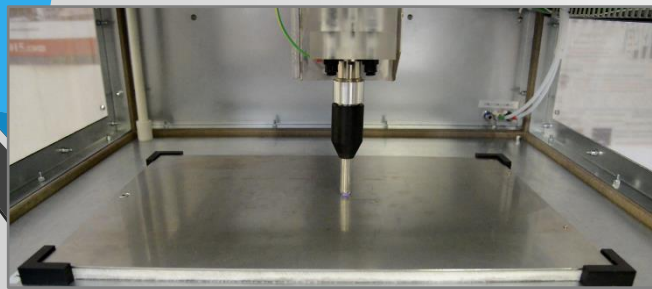


Plasma sources: DBD-Rod

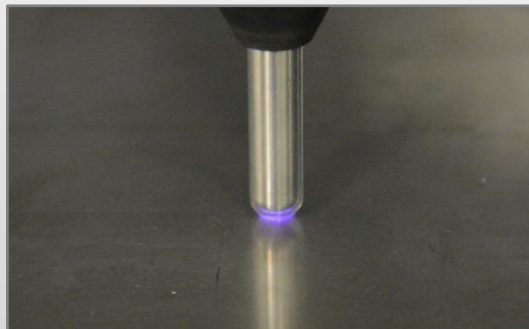
DBD-Rod is designed for the treatment of liquid and thin film.
This plasma source does not require a gas flow but can be operated in ambient air



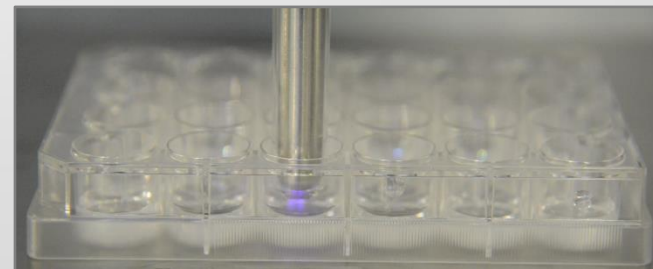
Mounting of the source



Treatment on a metallic surface



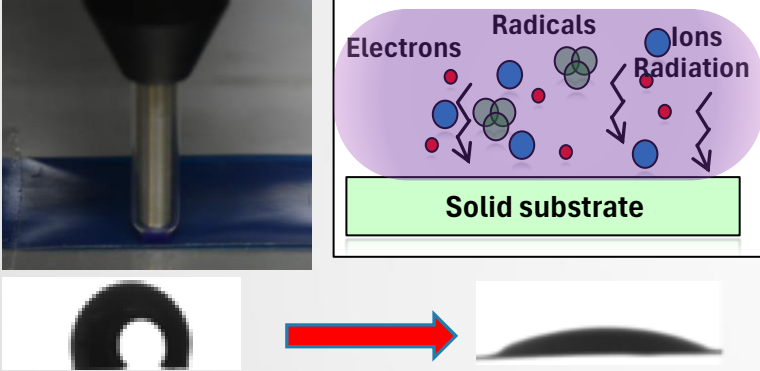
Zoom



Treatment of liquids

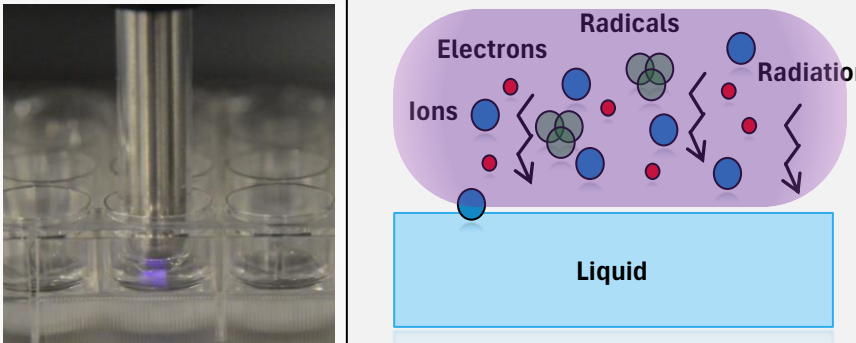
Supported processes: DBD-Rod

DBD Rod is designed for functionalization, surface activation and treatment of liquids.



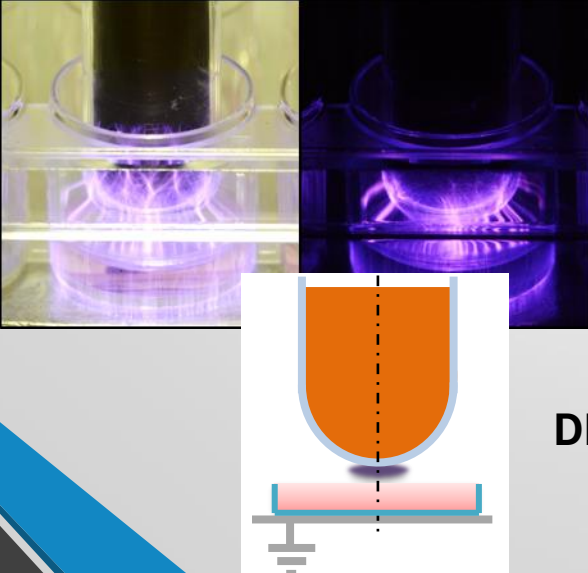
The diagram illustrates the surface functionalization and activation process. On the left, a photograph shows a DBD rod tip in contact with a dark surface. To its right, a schematic diagram shows a purple oval containing 'Electrons' (red dots), 'Radicals' (green circles), and 'Ions' (blue circles), with 'Radiation' (wavy arrows) directed towards a green 'Solid substrate'. Below this, a red arrow points from a dark, circular ring to a dark, curved surface, representing the transition from a standard ring to a functionalized rod tip.

Surface functionalization and activation




The diagram illustrates the treatment of liquids. On the left, a photograph shows a DBD rod tip submerged in a liquid within a test tube. To its right, a schematic diagram shows a purple oval containing 'Electrons' (red dots), 'Radicals' (green circles), and 'Ions' (blue circles), with 'Radiation' (wavy arrows) directed towards a light blue 'Liquid' layer.

Treatment of liquids



This section shows the transition from a DBD-skin to a DBD-rod. On the left, two photographs show a purple plasma discharge over a liquid surface. On the right, a schematic diagram shows a U-shaped orange container with a dashed vertical line, positioned above a pink rectangular electrode connected to a ground symbol.

from
DBD-skin
to



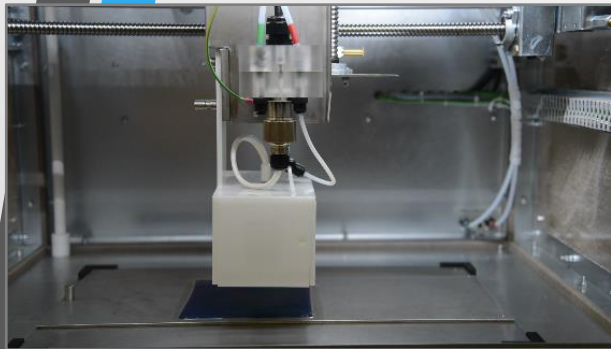
This section features the DBD-rod product and its plasma discharge. On the left is a photograph of the DBD-rod, a black handle with a silver metal tip. To its right is a photograph of a purple plasma discharge over a liquid surface, with a text box indicating '6 kV, 20 kHz, 0 mm, duty-cycle'. Below the rod is another photograph showing the plasma discharge at the tip of the rod.

DBD-ROD

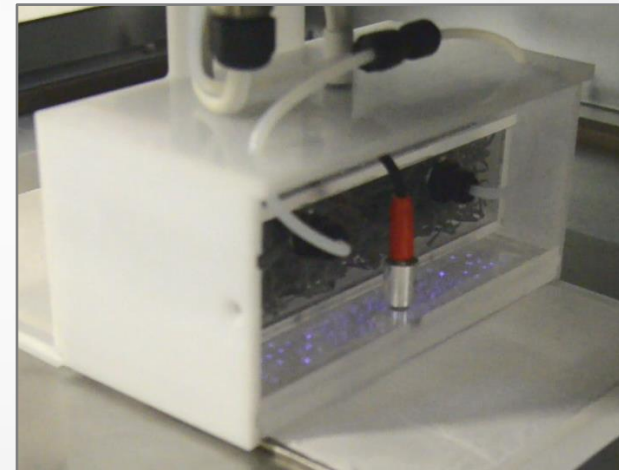
Plasma sources: DBD-Large Area

DBD-Large Area is specifically designed for functionalization treatment and deposition of coating on thin films. This plasma source has a single gas inlet, and is provided with a specific metal plate to use as ground electrode during operation.

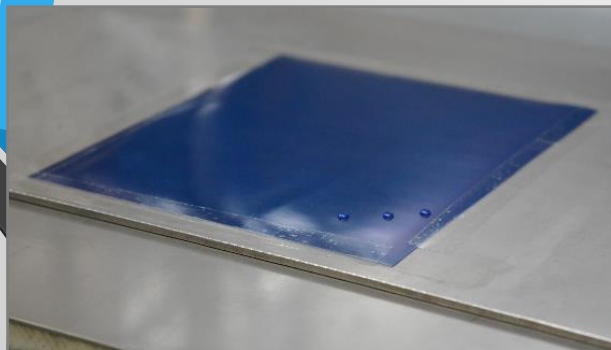
Thanks to its design, the volume between the plasma source and the working surface is saturated by the working gas allowing the generation of plasma in a controlled atmosphere condition.



Improvement of wettability of a polymeric film



Treatment of a thin film to improve wettability



Results



Mounting of the source



Results

Supported processes: DBD-Large Area

DBD Large Area is designed for treatment of functionalization, surface activation, thin film deposition.

